

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Cancel Claim 1 (original): A computer-implemented method for replacing software of an active packet switching device without interfering with packet flow, said method comprising:  
receiving a failover message at a currently active packet switching device (A);  
then transferring protocol state information from said packet switching device (A) to a currently inactive packet switching device (B); and  
de-activating said packet switching device (A) and activating said packet switching device (B).

Claims 2-24 (canceled).

Claim 25 (new): A computer-implemented method for reprogramming an active packet switching router without interfering with packet flow, said method comprising:  
receiving a software upgrade message at a currently active packet switching device (A);  
halting receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;  
transferring protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);  
reprogramming said packet switching device (B);  
sending a message requesting activation from said packet switching device (A) to said packet switching device (B);  
de-activating said packet switching device (A) and activating said reprogrammed packet switching device (B) to handle packet flow previously handled by said packet switching device (A), including beginning receipt of new packets at said packet switching device (B);  
reprogramming said packet switching device (A), including retrieving new packet processing software from a remote location; and thereafter  
de-activating said packet switching device (B) and re-activating said packet switching device (A).

Claim 26 (new): The method of claim 25 wherein reprogramming said packet switching device (B) comprises retrieving new packet processing software from a remote location.

Claim 27 (new): The method of claim 25 wherein said protocol state information comprises register values.

Claim 28 (new): The method of claim 25 further comprising:  
operating said packet switching device (A) as a back-up after de-activating said packet switching device (A).

Claim 29 (new): A computer-implemented method for reprogramming an active packet switching router without interfering with packet flow, said method comprising:

receiving a software upgrade message at a currently active packet switching device (A);  
halting receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

transferring protocol state information comprising register values including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);

sending a message requesting activation from said packet switching device (A) to said packet switching device (B);

de-activating said packet switching device (A) and activating said reprogrammed packet switching device (B) to handle packet flow previously handled by said packet switching device (A), including beginning receipt of new packets at said packet switching device (B);

reprogramming said packet switching device (A), including retrieving new packet processing software from a remote location; and thereafter

de-activating said packet switching device (B) and re-activating said packet switching device (A).

Claim 30 (new): The method of claim 29 further comprising:  
reprogramming said packet switching device (B) prior to activating said packet switching device (B) including retrieving new packet processing software from a remote location.

Claim 31 (new): The method of claim 29 further comprising:

operating said packet switching device (A) as a back-up after de-activating said packet switching device (A).

Claim 32 (new): A computer program product that reprograms an active packet switching router without interfering with packet flow, said product comprising:

code that receives a software upgrade message at a currently active packet switching device (A);

code that halts receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

code that transfers protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);

code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B);

code that reprograms said packet switching device (B) before said packet switching device (B) is activated;

code that de-activates said packet switching device (A) and activates said packet switching device (B) to handle packet flow previously handled by said packet switching device (A);

code that reprograms said packet switching device (A) after de-activation, including code that retrieves new packet processing software from a remote location;

code that de-activates said packet switching device (B) and re-activates said packet switching device (A) after reprogramming; and

a computer-readable storage medium that stores the codes.

Claim 33 (new): The product of claim 32 wherein said code that reprograms said packet switching device (B) comprises code that retrieves new packet processing software from a remote location.

Claim 34 (new): The product of claim 32 wherein said protocol state information comprises register values.

Claim 35 (new): The product of claim 32 further comprising:

code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.

Claim 36 (new): A computer program product that reprograms an active packet switching router without interfering with packet flow, said product comprising:

code that receives a software upgrade message at a currently active packet switching device (A);

code that halts receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

code that transfers protocol state information comprising register values including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);

code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B);

code that de-activates said packet switching device (A) and activates said packet switching device (B) to handle packet flow previously handled by said packet switching device (A);

code that reprograms said packet switching device (A) after de-activation, including code that retrieves new packet processing software from a remote location;

code that de-activates said packet switching device (B) and re-activates said packet switching device (A) after reprogramming; and

a computer-readable storage medium that stores the codes.

Claim 37 (new): The product of claim 36 further comprising:

code that reprograms said packet switching device (B) before said packet switching device (B) is activated and further comprising code that retrieves new packet processing software from a remote location.

Claim 38 (new): The product of claim 36 further comprising:

code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.

Claim 39 (new): A packet switching system comprising:

a currently active packet switching device (A);  
a packet switching device (B); and  
a memory system storing:  
code that receives a software upgrade message at said packet switching device (A);  
code that halts receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;  
code that transfers protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to said packet switching device (B);  
code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B);  
code that reprograms said packet switching device (B) before said packet switching device (B) is activated;  
code that de-activates said packet switching device (A) and activates said packet switching device (B) to handle packet flow previously handled by said packet switching device (A);  
code that reprograms said packet switching device (A) after de-activation, including code that retrieves new packet processing software from a remote location; and  
code that de-activates said packet switching device (B) and re-activates said packet switching device (A) after reprogramming.

Claim 40 (new): The system of claim 39 wherein said code that reprograms said packet switching device (B) comprises code that retrieves new packet processing software from a remote location.

Claim 41 (new): The system of claim 39 wherein said protocol state information comprises register values.

Claim 42 (new): The system of claim 39 further comprising:  
code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.

Claim 43 (new): A packet switching system comprising:

a currently active packet switching device (A);

a packet switching device (B); and

a memory system storing:

code that receives a software upgrade message at said packet switching device

(A);

code that halts receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

code that transfers protocol state information comprising register values including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to said packet switching device (B);

code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B);

code that de-activates said packet switching device (A) and activates said packet switching device (B) to handle packet flow previously handled by said packet switching device (A);

code that reprograms said packet switching device (A) after de-activation, including code that retrieves new packet processing software from a remote location; and

code that de-activates said packet switching device (B) and re-activates said packet switching device (A) after reprogramming.

Claim 44 (new): The system of claim 43 further comprising:

code that reprograms said packet switching device (B) before said packet switching device (B) is activated and further comprising code that retrieves new packet processing software from a remote location.

Claim 45 (new): The system of claim 43 further comprising:

code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.

Claim 46 (new): A packet switching system comprising:

a currently active packet switching device (A);

a currently inactive packet switching device (B); and  
a memory system storing:  
code that receives a failover message at said currently active packet switching device (A);  
code that then transfers protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to said packet switching device (B);  
code that reprograms said packet switching device (B) before said packet switching device (B) is activated;  
code that de-activates said packet switching device (A), including code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B) and code that halts receipt of new packets at said packet switching device (A) upon receipt of said failover message, and that activates said packet switching device (B), including code that begins receipt of new packets at said packet switching device (B);  
code that reprograms said packet switching device (A) after said packet switching device (A) is de-activated, including code that retrieves new packet processing software from a remote location; and  
code that reprograms said packet switching device (B) before said packet switching device (B) is activated.

Claim 47 (new): The system of claim 46 wherein said code that reprograms said packet switching device (B) comprises code that retrieves new packet processing software from a remote location.

Claim 48 (new): The system of claim 46 wherein said protocol state information comprises register values.

Claim 49 (new): The system of claim 46 further comprising:  
code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.

Claim 50 (new): A packet switching system comprising:

a currently active packet switching device (A);  
a packet switching device (B); and  
a memory system storing:

code that receives a software upgrade message at said packet switching device (A);

code that halts receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

code that transfers protocol state information comprising register values including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to said packet switching device (B);

code that sends a message requesting activation from said packet switching device (A) to said packet switching device (B);

code that de-activates said packet switching device (A) and activates said packet switching device (B) to handle packet flow previously handled by said packet switching device (A);

code that reprograms said packet switching device (A) after de-activation, including code that retrieves new packet processing software from a remote location;

code that de-activates said packet switching device (B) and re-activates said packet switching device (A) after reprogramming; and

code that reprograms said packet switching device (B) before said packet switching device (B) is activated.

Claim 51 (new): The system of claim 50 further comprising  
code that reprograms said packet switching device (B) before said packet switching device (B) is activated and further comprising code that retrieves new packet processing software from a remote location.

Claim 52 (new): The system of claim 50 further comprising:  
code that operates said packet switching device (A) as a back-up after said packet switching device (A) is de-activated.



Claim 53 (new): A packet switching router having a packet switching devices, said router comprising:

means for receiving a failover message at a currently active packet switching device (A);

means for then transferring protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);

means for sending a message requesting activation from said packet switching device (A) to said packet switching device (B);

means for halting receipt of new packets at said packet switching device (A) upon receipt of said failover message;

means for de-activating said packet switching device (A) and activating said packet switching device (B), including beginning receipt of new packets at said packet switching device (B); and

means for reprogramming said packet switching device (A) after de-activating said packet switching device (A), including retrieving new packet processing software from a remote location.

Claim 54 (new): The router of claim 53 further comprising:

means for reprogramming said packet switching device (B) prior to activating said packet switching device (B).

Claim 55 (new): The router of claim 54 wherein reprogramming comprises retrieving new packet processing software from a remote location.

Claim 56 (new): The router of claim 53 further comprising:

means for operating said packet switching device (A) as a back-up after de-activating said packet switching device (A).

Claim 57 (new): The method of claim 53 wherein said protocol state information comprises register values.

Claim 58 (new): A packet switching router with a plurality of packet switching devices, said router comprising:

means for receiving a software upgrade message at a currently active packet switching device (A);

means for halting receipt of new packets at said packet switching device (A) upon receipt of said software upgrade message;

means for transferring protocol state information, including routing tables, negotiated state information, authorization status and learned routing state information, from said packet switching device (A) to a currently inactive packet switching device (B);

means for sending a message requesting activation from said packet switching device (A) to said packet switching device (B);

means for de-activating said packet switching device (A) and activating said packet switching device (B) to handle packet flow previously handled by said packet switching device (A), including beginning receipt of new packets at said packet switching device (B);

means for thereafter reprogramming said packet switching device (A), including retrieving new packet processing software from a remote location; and

means for thereafter de-activating said packet switching device (B) and re-activating said packet switching device (A).

Claim 59 (new): The router of claim 58 further comprising:

means for reprogramming said packet switching device (B) prior to activating said packet switching device (B).

Claim 60 (new): The router of claim 59 wherein reprogramming comprises retrieving new packet processing software from a remote location.

Claim 61 (new): The router of claim 58 further comprising:

means for operating said packet switching device (A) as a back-up after de-activating said packet switching device (A).

Claim 62 (new): The method of claim 58 wherein said protocol state information comprises register values.